To Smithsonian-Institution
Washington U.S.
from
Middle Kund

WISSENSCHAFTLICHE ERGEBNISSE

DER SCHWEDISCHEN ZOOLOGISCHEN EXPEDITION

NACH

DEM KILIMANDJARO, DEM MERU

UND

DEN UMGEBENDEN MASSAISTEPPEN DEUTSCH-OSTAFRIKAS

1905—1906

UNTER LEITUNG VON

PROF. DR. YNGVE SJÖSTEDT

HERAUSGEGEBEN MIT UNTERSTÜTZUNG VON DER KONIGL. SCHWEDISCHEN AKADEMIE DER WISSENSCHAFTEN

21

CRUSTACEA

2. ISOPODA

BY

G. BUDDE-LUND.

KØBENHAVN

WITH 2 PLATES.

TRYCKT HOS

P. PALMQUISTS AKTIEBOLAG, STOCKHOLM 1910.

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21. CRUSTACEA.

2. Isopoda

by

G. BUDDE-LUND.

With 2 plates.

The collections brought back by the expedition of Professor YNGVE SJOSTEDT from East-Africa contained eighten species (621 ex.) of terrestrial Isopods. Sixteen of these species were collected at the mountain of Kilimandjaro and at its environs, one species was taken at Mombo and one at Tanga. Thirteen species were new, four hitherto only known from East-Africa, one species is cosmopolite.

Besides these thirteen new species, I know a large number of undescribed species of terrestrial Isopods from East-Africa; it will, however, be away from the purpose for this paper to describe all these species here, but it is always necessary when describing the new forms to take into consideration the whole fauna of terrestrial Isopods known from East-Africa; I have only taken up for description here a few species from other collections known from the tract of Kilimandjaro.

The greatest part of the terrestrial Isopods collected in Central-Africa belong to types of genera, which are peculiar to this continent.

Oniscidae.

Subfamilia: *Eubelinae.*

In 1899 I have published a paper[1] containing descriptions of 22 species belonging to this subfamily, more recently I have added one species[2], and in 1907 H. RICHARDSON described 12 new species[3]. Of these 35 species only four were known out of Africa,

[1] G. BUDDE-LUND: A Revision of Crustacea Isopoda Terrestria. I. *Eubelum.* Kjobenhavn 1899.

[2] G. BUDDE-LUND: Isopoda v. Madagascar u. Ostafrika in Voeltzkow, Reise in Ostafrika. Bd. II, p. 271. Stuttgart 1908.

[3] H. RICHARDSON: Terrestrial Isopods of the family Eubelidae, coll. in Liberia (Smith-son-Miscell. Coll. vol. 50, p. 219.).

three species were found in the little island St. Vincent, and one in Madagascar; but during the expeditions made in the last decennium to Abyssinia, British- and Geman-East-Africa the European Museums, particularly at Berlin and Paris were augmented with many new forms, which I have had occasion to see and examine.

I have made descriptions and drawings of more than forty new species of this subfamily, and these, which I hope to get occasion to publish afterwards, are yet, as I have written in the year 1899 "certainly but forerunners for a swarm of forms, which the inner Africa shall bring to light".

The *Eubelinae* present habitually very different types, from the Armadillo-like forms, which have a strong ability to conglobation, to the Percellio-like flattened forms, that the *Eubelinae* seem to repeat the genuine *Oniscinae* building a parallel series of forms.

Only carefull studies, principally with the mouth-parts, can give the decisive criterion for the separation from the other subfamilies. The deep furrow in the first truncal segment, separating the epimera from the middle-part of the segment, is present in the greater part of the species, however, not in all the species of *Eubelinae*, has given a superficial likeness with several other forms of the family, as species of *Synarmadillo*, *Periscyphis* and *Microcercus*.

I describe below the four new species collected by the expedition, three of them are representatives for new genera.

Benechinus nov. gen.

Antennæ flagello biarticulato. Mandibulæ penicillo unico libero munitæ; seta inferior e radice brevi ramis paucioribus ciliatis instructa. Maxillæ prioris paris lacinia exterior dentibus novem, 4+5 (dens 1. et 4. apice fissus, 2. 3. 5. acutus); lacinia interior apice penicillis numero c. sex, post nulla spina. Omnia segmenta trunci post in laminam validam transversam declivam producta. Segmentum 1. sulco epimeri intramarginali solito nullo, margine laterali post fisso. Caudæ pleopodes omnium parium tracheis parvis instructi. Telsum medio tetragono producto. Uropodes telso breviores; exopoditum parvum, apicale.

Benechinus armatus n. sp.

Tab. I, Fig. 1—1 i.

Tota superficies minutissime squamata. Oculi parvi, globosi, in angulo anteriore capitis utrinque positi; ocelli numero c. 10. Antennæ breviores, tertiam corporis partem longitudine subæquantes; flagellum scapi articulo 5. longitudine æquale, articulo priore altero triplo breviore. Epistoma convexiusculum, supra maxime in mediam frontem reflexum, margine superiore in medio deleto, ad latera manifesto et utrinque in lobos laterales ante oculos erectos producto. Clypeus brevis, leviter fornicatus, lobis lateralibus minutis transverse rotundatis. Linea marginalis verticalis utrinque ante oculos producta, epistoma tamen non attingens. Trunci segmentum 1. magnum; epimera magna nullo sulco a parte media segmenti discreta, margine laterali tenui, altecincto, angulis anticis et posticis late rotundatis, post supra leviter fisso: lacinia superior magna, rotunda, retroducta. Margo posterior omnium segmentorum in laminam transversam, validam, reclivam, in

medio leviter incurvam, productus; epimera omnium segmentorum in laminam magnam, ovalem retroducta. Pronotum segmenti 2. brevius. Caudae epimera segmenti 3. 4. 5. longa, angustiora; epimera segmenti 5. apicibus convergentibus. Telsum duplo fere longius quam latius, epimera segmenti 5. vix superans, in medio leviter coarctatum; pars basalis parte apicali subtetragona multo brevior. Uropodes breves, multo breviores quam telsum; scapus oblique tetragonus; exopoditum minutum; endopoditum longum, tenue. Subunicolor, brunneus. — Long. 7—8 mm. Lat. 4 mm.

Patria: *Meru*, in the superior part of the rainforest, c. 3500—4600 m. about 10 specimens were taken in the month of January 1906.

Ignamba nov. gen.

Antennae flagello biarticulato. Mandibula penicillo unico libero munita; seta inferior e radice brevi ramis pluribus ciliatis instructa. Maxillae prioris paris lacinia exterior dentibus novem, 4 + 5 (dentes omnes subintegri, acutiores); lacinia interior apice penicillis numero 4—5, post spina. Trunci segmentum 1. epimero crasso, supra sulco longitudinali a parte media segmenti discreto, margine laterali ad longitudinem minus manifesto sulcato, post fisso. Caudae pleopodes omnium parium tracheis instructi. Telsum tetragonum, lateribus leviter incurvis. Uropodes telsum non superantes; exopoditum minutum, apicale.

Ignamba brevis n. sp.

Tab. I, Fig. 15—23.

Ovalis, convexa, sublaevis, subopaca, minutis simpliciter reticulate punctata. Oculi magni; ocelli numerosi, numero c. 20 vel plures. Antennae tertiam corporis partem paulum superantes; flagellum scapi articulo 5. paulo brevius, articulo priore altero plus triplo breviore. Epistoma supra reclivum, margine superiore in medio deleto in lateribus frontem paululum superante. Clypeus brevis, lobis lateralibus parvis, semicircularis. Linea verticalis marginalis utrinque epistoma non attigens. Trunci segmentum 1. margine laterali crassiore, sulco deletiore instructo, post leviter et subaequaliter fisso; lacinia interior subovalis, paulo brevior quam exterior; sulcus supramarginalis profundus, nonnihil ante angulum posticum rotundatum desinens; margo posterior utrinque fortius incurvus. Segmentum 2. pronoto mediocri, epimeris ante leviter fissis; segmentum 3. epimeris ante crassioribus. Caudae epimera segmenti 3. 4. 5. subrectangula, angulis anticis late rotundatis, angulis posticis acutioribus; epimera segmenti 5. paulum divergentia. Telsum paulo latius quam longius, trapezoidale, lateribus leviter incurvis, epimera segmenti praeanalis superans. Uropodes breviores, telsum non superantes; scapus oblongus, oblique rectangulus; exopoditum minutissimum, punctiforme, vix longius quam latius, incisurae profundae apicis scapi insertum; endopoditum longum, gracile, telso paulo brevius. Color brunneus, crebro flavomaculatus. — Long. 7—8 mm. Lat. 4—4½ mm.

Patria: This species seems not to be rare in the tract of *Kilimandjaro*. During the expedition of Prof. SJÖSTEDT one specimen, 17 May 1905, and two specimens, 5 January 1906, were taken in the rainforest at Kibonoto. I have also seen a specimen preserved in the Museum at Paris, it was taken in March 1904 at Kiboscho, alt.

1700—2000 m., and presented by Mr. CH. ALLUAUD; in the Museum at Berlin I have seen two specimens, one from Kakayu (Mr. I. THOMAS) in the vicinity of Kilimandjaro, and one from Mad-schame (Mr. PAESLER) on the same mountain.

Ignamba microps n. sp.
Tab. I, Fig. 24.

Ovalis, convexa, subnitida, minutissime setigero punctata. Oculi parvi, prominentes; ocelli numero c. 9, ægre pigmentati. Antennæ tertiam corporis partem paulo longiores; flagellum scapi articulo 5. paulo brevius, articulo priore altero plus triplo breviore. Epistoma supra elevatius cum fronte concretum, margine discernente subdeleto, infra, supra clypeum, tuberculo minuto instructum. Clypeus porrectus, lobis lateralibus parvis, latioribus. Trunci segmentum 1. margine laterali crasso, sulco marginali subdeleto, post leviter et subæqualiter fisso: lacinia interior ovalis, quam exterior late rotundatus vix brevior sed angustior; sulcus supramarginalis satis profundus; margo posterior subtransversus, vix levissime utrinque incurvus. Segmentum 2. pronoto majore, epimeris subtus ante crassioribus, vix fissis. Pori dorsales omnium segmentorum manifesti, in tuberculo procul a margine laterali prope marginem posteriorem segmenti positi. Caudæ epimera segmenti 3. 4. 5. subrectangula; epimera segmenti 5. paulum convergentia, telso paulo breviora. Telsum latius quam longius; basis et apex subæque longi, apex subquadratus, margine postico leviter curvato. Uropodes breves, telsum non superantes; scapus oblongus, oblique rectangulus; exopoditum minutissimum, vix longius quam latius, fossæ superiori lateris posterioris scapi insertum; endopoditum longum, crassius, telso vix brevius. Color plumbeus vel lividus, insertionibus muscularibus dorsi perlucentibus albidis. — Long. 5,5 mm. Lat. 2,7 mm.

Paria: *Kilimandjaro*, at Kiboscho, 3000 m.; half a score of specimens were taken in the narrow clefts of the mountain in the month of February 1906.

Gelsana nov. gen.

Antennæ flagello biarticulato. Mandibula penicillo unico libero munita; seta inferior e radice brevi ramis pluribus ciliatis instructa. Maxillæ prioris paris lacinia exterior dentibus novem, 4 (forsitan etiam denticulo accessorio ante dentem secundum) + 5 (omnes dentes integri, acutiores); lacinia interior apice penicillis 3, tertio postico parvo, post spina parva. Trunci segmentum epimero tenuiore, nullo sulco superiore munito, margine laterali non sulcato, post integro. Caudæ pleopodes omnium parium tracheis parvis instructi. Telsum medio lato, tetragono producto. Uropodes telsum paulum superantes; exopoditum parvum, apicale.

Gelsana abnormis n. sp.
Tab. I, Fig. 25—33.

Superficies sublævis, squamis minutissimis sparse obtecta. Oculi magni, paulum prominentes, marginem lateralem capitis utrinque occupantes; ocelli numero c. 20—22. Antennæ breviores, tertiam corporis partem longitudine non superantes; scapi articulus 2. brevis, articulus 3. non longior quam articulus 2.; flagellum scapi articulo 5. paulo

brevius, articulo priore brevissuno, altero quadruplo breviore quam articulo. Epistoma supra tumide productum, fronti mediae adcretum, in lateribus lobos parvos formans. Clypeus supra utrinque ad lobos laterales parvos leviter tumosus. Linea marginalis verticalis utrinque fere ad epistoma producta. Trunci segmentum 1. margine laterali tenniore, angulis posticis integris, obtusis; margo posterior utrinque ad angulos exteriores leviter incurvus. Segmentum 2. pronoto majore, epimeris integris, margine posteriore utrinque incurvo, angulis exterioribus rotundatis. Segmentum 3. margine posteriore etiam utrinque incurvo, angulis exterioribus rotundatis. Caudae epimera segmenti 3. 4. 5. late triangula, segmenti 3. imprimis lata, breviora; epimera segmenti 5 telso breviora, paulum divergentia, subparallela. Pleopodum exopodita parium 1. 2. tracheis majoribus, posteriorum trium parium tracheis minimis. Uropodum scapus oblique tetragonus, post paulum angustatus; exopoditum parvum, elongatum, multo longius quam latius apici scapi insertum; endopoditum longum, longius quam scapus. Color flavus, crebro e griseo vel e fusco maculatus, maculis irregulariter maxime in medio dorso dispersis. – Long. 5 mm. Lat. 2,5 mm.

Patria: *Kilimandjaro,* Kiboscho. A few specimens were taken in February 1906.

Subfamilia: *Oniscinae.*

In "A Revision of Crust. Isop. Terr." p. 36 I have attempted to set up in a natural arrangement all the genera belonging to the family of *Oniscidae*, and I have there divided the family in eight subfamilies: 1. *Eubelinae*, 2. *Spherilloninae*, 3. *Rhyscotinae*, 4. *Armadilloniscinae*, 5. *Scyphacinae*, 6. *Detonina*, 7. *Oniscinae*, 8. *Stenoniscinae*.

Each of these subfamilies has exclusive characters taken from the mouth-parts, and owing to them, it had been possible everywhere, so far as my studies have gone, to refer every genus to its natural place.

Among the above nominated subfamilies I have treated in the main points the characters of five:

1. *Eubelinae* B.-L. Rev. Crust. Isop. p. 1;

2. *Spherilloninae* B.-L. ibid. p. 41;

3. *Rhyscotinae* B.-L. Isopoden in Voeltzkows Reise Ost-Afrika, II, p. 298.

4. *Armadilloniscinae* B.-L. ibid. p. 302.

6. *Detoninae* B.-L. Landisop. in Deutsch Südp.-Exp. IX., Zool. I, p. 84.

Two of the three of the remaining subfamilies, 5. *Scyphacinae* and 8. *Stenoniscinae*, each containing but a few known forms, I have not had occasion to make as object for a deeper examination particularly because I have not had sufficient material.

The seventh subfamily, *Oniscinae*, contains many more known forms than all the other subfamilies together; I have 2 p. 37 divided the *Oniscina* in three groups: 1. *Armadilloidea*, 2. *Oniscoidea*, 3. *Alloniscoidea*.

The genera placed in these three groups here must be subjected to further alterations as my later inquiries have shown.

In a later paper I have a character pointed out from the mandibulae from which the large genus *Armadillo* seems to retain types for different groups of genera. Further

researchs about the stability of this character will probably give reason for a more natural combination between the genera. I have made numerous examinations in this matter but the time and the space do not permit of my giving in this paper the results I have reached.

I shall here only give a survey over the essential morphological characters of the numerous genera belonging to the subfamily: *Oniscinae*.

The numbers below refer to the following papers, which contain contributions to the systematic of the *Oniscinae*.

1. Budde-Lund: Crustacea Isopoda Terrestria. Hauniæ 1885.

2. » A Revision of Crustacea Isopoda Terrestria. I. Eubelum. Kjöbenhavn 1899. II. Spherilloninae. III. Armadillo. Kjöbenh. 1904.

3. » Die Landisopoden der Deutschen Südpolar-Expedition 1901—1903. IX. Zoologie I. Berlin 1906.

4. » Terrestrial Isopoda from Egypt, in Results of the Swedish Zoological Expedition to Egypt and the White Nile 1901 under the Direction of L. A. Jägerskiöld. Nr. 26. A. Uppsala 1908.

5. Isopoda von Madagascar und Ostafrika in Voeltzkow, Reise in Ostafrika in den Jahren 1903—1905. II. Stuttgart 1908.

6. Land-Isopoden in L. Schultze, Forschungsreise im westlichen und zentralen Südafrika, ausgeführt in den Jahren 1903—1905 (Denkschriften der medizinisch-naturwissenschaftlichen Gesellschaft. Bd. XIV. Jena 1909.).

Conspectus morphologicus generum Oniscinarum.

I. Mandibula penicillo unico libero (Conf. B.-L. **6** p. 54).

1. Diploexochus Br. — B.-L. **6** p. 54; **2** p. 100.
2. Glomerulus B.-L. **6** p. 54; **2** p. 115.
3. Polyacanthus B.-L. **6** p. 54; **2** p. 116.
4. Bethalus B.-L. **6** p. 54; **2** p. 127.
5. Microcercus n. g. vide infra.
6. Periscyphis Gerst. — B.-L. **4** p. 10; **1** p. 42 & 293.
7. Synarmadillo Dollf. vide infra
8. Niambia B.-L. **6** p. 59.
9. Gerufa B.-L. **6** p. 58.
10. Nagara B.-L. **5** p. 284.
11. Bathytropa B.-L. **1** p. 196.
12. Plathyarthrus Br. — B.-L. **1** p. 198.
13. Trichorhina B.-L. **5** p. 293.
14. Spelaeoniscus Răcov., Arch. zool. exp. & gén. s. 4. IX. p. 398.
15. Toradjia Dollf., Zool. Erg. Niedl-Ostind. IV. p. 365.
16. Adinda B.-L. **2** p. 37.
17. Diacara B.-L. **5** p. 294.
18. Benthana B.-L. **5** p. 289.
19. Balloniscus B.-L. **5** p. 289.
20. Philoscia Latr. — B.-L. **1** p. 207; **5** p. 289.
21. Naliota B.-L. **5** p. 290.
22. Nahia B.-L. **5** p. 290; **3** p. 89.

23. Duluna B.-L. **5** p. 292.
24. Phallomscus B.-L. **5** p. 296.
25. Aphiloscia B.-B. **5** p. 291.
26. Phalaba n. g. vide infra.
27. Allonisens Dana. — B.-L. **5** p. 295, **1** p. 224.
28. Spharonisens Gerst. Entomol. Zeitsch. 1854, p. 314, Tab. 2. — B.-L. **1** p. 44.
29. Mamusa n. g. = Philoscia longicornis B.-L. **1** p. 221, **4** p. 9.
30. Hesea B.-B. **5** p. 289.
31. Stenophiloscia Verhoeff, Arch. f. Biontologie II, 1908, p. 340.
32. Halophiloscia Verhoeff, ibid.
33. Setaphora B.-L. **5** p. 290.

1 a. Mandibula penicillis pluribus liberis.

34. Armadillo Dum. — B.-L. **1** p. 16, **2** p. 97, **6** p. 54.
35. Cubaris Br. — B.-L. **2** p. 118, **6** p. 54.
36. Pericephalus B.-L. **2** p. 117, **6** p. 54.
37. Armadillidium Br. — B.-L. **1** p. 49.
38. Eluma B.-L. **1** p. 47.
39. Rogopus B.-L. **5** p. 284.
40. Gymnoderma B.-L. **5** p. 284.
41. Mica B.-L. **5** p. 284.
42. Leptotrichus B.-L. **5** p. 284, **1** p. 193.
43. Tura B.-L. **5** p. 282.
44. Angara B.-L. **4** p. 5, **5** p. 284.
45. Uramba B.-L. **5** p. 283.
46. Hemilepistus B.-L. **1** p. 152, **5** p. 284.
47. Cylisticus Schn. — B.-L. **1** p. 77, **5** p. 284.
48. Porcellio Latr. — B.-L. **1** p. 129, **5** p. 284.
49. Polyplatus B.-B. **1** p. 95, **5** p. 284.
50. Pachyderes B.-L. **1** p. 116, **5** p. 284.
51. Trachelipus B.-L. **1** p. 85, **5** p. 284.
52. Burrana B.-L. **1** p. 127, **5** p. 284.
53. Lucasius Kinah. — B.-L. **1** p. 135, **5** p. 284.
54. Metoponorthus B.-L. **1** p. 169, **5** p. 284.
55. Talifa B. L. **1** p. 190, **5** p. 284.
56. Pagana B. L. **5** p. 287.
57. Agnara B.-L. **5** p. 286.
58. Eleonisens Racov. Arch. zool. expér. & gén. s. 4, VII, p. 203
59. Onisens Lin. — B. L. **1** p. 201.

2. Flagellum antennarum 2-articulatum.

1. Diploexochus. 2. Glomeruhus. 3. Polyacanthus. 4. Bethalus. 5. Microcerens. 6. Perisceyphus. 7. Synarmadillo. 8. Xiambia. 9. Gerufa. 10. Nagara. 11. Bathytropa. 12. Platyarthrus. 13. Trichorhina. 14. Spelaeonisens. 15. Toradjia. 16. Adinda. 34. Armadillo. 35. Cubaris. 36. Pericephalus. 37. Armadillidium. 38. Eluma. 39. Rogopus. 40. Gymnoderma. 41. Mica. 42. Leptotrichus. 43. Tura. 44. Angara. 45. Uramba. 46. Hemilepistus. 47. Cylisticus. 48. Porcellio. 49. Polyplatus. 50. Pachyderes. 51. Trachelipus. 52. Burrana. 53. Lucasius. 54. Metoponorthus. 55. Talifa. 56. Pagana. 57. Agnara. 58. Eleoniscus.

2 a. Flagellum antennarum 3-articulatum.

17. Diacara. 18. Benthana. 19. Ballonisceus. 20. Philoscia. 21. Naliota. 22. Nahia. 23. Didima. 24. Phallonisceus. 25. Aphiloscia. 26. Phalaba. 27. Allonisceus. 28. Sphæronisceus. 29. Mamusa. 30. Hesca. 31. Stenophiloscia. 32. Halophiloscia. 33. Setaphora. 59. Onisceus.

3. Maxillipedis mala apice aculeis (plerumque 2—3) et spina longiore munita.

1. Diploexochus. 2. Glomerulus. 3. Polyacanthus. 4. Bethalus. 5. Microcercus. 6. Periscyphis. 7. Synarmadillo. 8. Niambia. 9. Gerufa. 10. Nagara. 11. Bathytropa. 12. Platyarthrus. 13. Trichorhina. 14. Spelaeonisceus. 17. Diacara. 18. Benthana. 19. Ballonisceus. 20. Philoscia. 21. Naliota. 22. Nahia. 23. Didima. 24. Phallonisceus. 25. Aphiloscia. 26. Phalaba. Omnia genera sectionis 1 a. N:o 34—59.

3 a. Maxillipedis mala apice hirsuta, raro etiam spina munita.

15. Toradjia. 16. Adinda. 27. Allonisceus. 28. Sphæronisceus. 29. Mamusa. 30. Hesca. 31. Stenophiloscia. 32. Halophiloscia. 33. Setaphora.

4. Uropodum scapus magnus; exopoditum parvum vel minutum, plerumque scapi lateri interiori insertum.

1. Diploexochus. 2. Glomerulus. 3. Polyacanthus. 4. Bethalus. 5. Microcercus. 6. Periscyphis. 7. Synarmadillo. 14. Spelaeonisceus. 15. Toradjia. 16. Adinda. 28. Sphæronisceus. 34. Armadillo. 35. Cubaris. 36. Pericephalus.

4 a. Uropodum scapus mediocris, vix major quam exopoditum; exopoditum tetragonum vel ovale, deplanatum.

37. Armadillidium. 38. Eluma.

4 b. Uropodum scapus mediocris, plerumque multo brevior quam exopoditum; exopoditum elongatum, apici scapi insertum.

Genera N:o 8—13, 17—27, 29—33, 39—59.

5. Partes pleurales capitis concretæ (Conf. **1** p. 15 & p. 75 & 5 p. 296).

1. Diploexochus. 2. Glomerulus. 3. Polyacanthus. 4. Bethalus. 5. Microcercus. 6. Periscyphis. 7. Synarmadillo. 14. Spelaeonisceus. 15. Toradjia. 16. Adinda. 25. Aphiloscia. 26. Phalaba. 28. Sphæronisceus. 30. Hesca. 34. Armadillo. 35. Cubaris. 36. Pericephalus. 37. Armadillidium. 38. Eluma. 58. Eleonisceus.

5 a. Partes pleurales capitis linea marginali verticali decurrente manifesto discretæ.

8. Niambia. 9. Gerufa. 10. Nagara. 11. Bathytropa. 12. Platyarthrus. 13. Trichorhina. 17. Diacara. 18. Benthana. 19. Ballonisceus. 20. Philoscia. 21. Naliota. 22. Nahia. 23. Didima. 24. Phallonisceus. 27. Allonisceus. 29. Mamusa. 31. Stenophiloscia. 32. Halophiloscia. 33. Setaphora. — Genera 39—57. 59. Onisceus.

I will at the same time call the attention of future inquirers to a further important character. In my classification of the family *Oniscidæ* in 1885 I used the following characters for the two sections:

I. *Armadilloidea:* Trunci annuli in pullo neonato septem ut in adulto; folliculus abdominalis nullus.

II. *Oniscoidea:* Trunci annuli in pullo neonato sex, annulo septimo non evoluto; folliculus abdominalis adest.

I had not at that time seen any *Armadillidium* with the lamnate appendages to the anterior truncal-legs, which form a marsupium, neither had I met any young with only six truncal segments, and this was one of the reasons why I placed this large genus, certainly with some doubt, nearest to *Armadillo*. Since I have found this marsupium on several species of *Armadillidium*, and have for this reason and also on account of the formation of the mouth-parts later, 2 p. 37, referred this genus to the *Oniscoidea*.

With the exception of the species of the genus *Armadillidium*, I have not, however, found this marsupium on any of the species of the genera referred by me to the *Armadilloidea*. It may be added, however, that a negative proof is no definite proof, and as I have not had fully developed female specimens of several species of other genera for examination, neither I am able to prove that a marsupium is found there.

As this character is found on the majority of the Marine-Isopods that have been examined, and which appears to be of very great importance, it will be of importance to have definitivily shown, whether the biological conditions, that have apparently shown themselves with the well developed ability of conglobation, has acted as a hinderance in the development of the marsupium.

Two genera which I have previously referred with some doubt to the subfamily *Oniscinae*, *Pseudarmadillo* SAUSSURE[1] and *Acanthoniscus* KINAHAN[2], I now refer to the subfamily *Spherilloninae*. Of the *Pseudarmadillo* I have had opportunity of examining specimens in the Berlin Museum; *Acanthoniscus* I only know from description and figures of H. RICHARDSON, but certain points here give me the impression, that it would be correct to place it among the *Spherilloninae*. It is also certain that *Anaphiloscia*[3] found by RACOVITZA in a cave on the island Malorca should be placed in the same subfamily.

Diploexochus.

Diploexochus bituberculatus n. sp.

Tab. II, Fig. 1—8.

Ovalis, tuberculatus, trunci segmentum 1. tuberculis duobus majoribus rotundis in medio dorsi positis, cetera segmenta trunci tuberculis oblongis in dimidia posteriore excelsiore parte segmentorum transversim positis ornata, cetera superficies dense et minute squamata. Oculi majores; ocelli magni, numero c. 12. Antennae breves, tertiam corporis partem longitudine subaequantes; flagellum scapi articulo 5. nonnihil brevius, articulo priore altero multis partibus breviore. Epistoma convexiusculum, dimidia superiore parte reflexum, margine superiore frontem vix superante. Linea marginalis verticalis post crassa, utrinque ante oculos incurva marginem superiorem epistomatis attingens. Trunci segmentum 1. margine laterali crasso, per totam longitudinem sulcato,

[1] H. DE SAUSSURE: Memoires p. serv. a l'hist. nat. du Mexique, des Antilles et des Etats-Unis. 1. Livr. Crustacés. Paris 1858, p. 67. — B.-L. 1 p. 11.

[2] KINAHAN in Proc. Dubl. Univ. I. p. 197. — H. RICHARDSON: Proc. United-St. Nat. Mus. XXXVI p. 131.

[3] RACOVITZA in Arch. Zool. expér. génér. 4. S. VII p. 182.

post subæqualiter fisso: lacinia interior rotundata paululo longior quam exterior; margo posterior subtransversus, angulis externis late rotundatis. Segmentum 2. pronoto brevi, lineari; epimera profunde fissa: lacinia interior longa, angusta, apice obtuso. Segmentorum 5. 6. 7. epimera infra duplicatura anteriore magna. Caudæ segmentum 5. epimeris fortius convergentibus. Telsum medio coarctato, latius quam longius. Uropodum scapus ejusdem fere longitudinis atque latitudinis, post paulum angustatus; exopoditum minutum, lateri superiori scapi, prope latus interius insertum; endopoditum breve, vix duplo longius quam latius, ovatum. Subunicolor, flavus. Long. 4,5 mm. Lat. 2,3 mm.

Patria: I have only seen one specimen taken at Kibonoto, *Kilimandjaro,* in leaf-mould together with specimens of *Synarmadillo marmoratus*, at an altitude of 13—1800 m., Nov. 1905.

Diploexochus nanus n. sp.

Tab. II, Fig. 9—15.

Superficies minutissime sed minus dense squamata; trunci segmenta ad latera obtuse tuberculata. Oculi mediocres, oblongi; ocelli magni, numero 13. Antennæ breves, tertia corporis parte breviores; scapi articulus 2. longior quam articulus 4, articulo 5. fere subæqualis; flagellum breve, scapi articulo 5. paululo brevius, articulo priore altero triplo breviore. Epistoma supra reflexum, infra transverse excavatum, margine superiore frontem in medio paulum, in lateribus nonnihil superante. Clypeus lobis lateralibus parvis, late rotundatis. Linea marginalis verticalis utrinque ante oculos valde incurva, marginem superiorem epistomatis utrinque attingens. Vertex crassus. Trunci segmentum 1. ante in medio bulbosum, ad margines laterales leviter excavatum; margo lateralis crassior, altecinctus, per duas partes longitudinis sulcatus; sulcus post latior et profunde paulum oblique divisus: laciniæ longitudine subæquales, lacinia interior angustior; margo posterior subrectus, utrinque ad angulos laterales levissime incurvus. Segmentum 2. pronoto perbrevi, lineari, epimeris profunde et oblique fissis. Segmenta 5. 6. 7. epimeris duplicatura inferiore brevi crassioribus. Segmenta 2.—7. dimidia posteriore parte segmenti priore parte excelsiore. Caudæ segmenta 3. 4. 5. epimeris oblique rectangulis; epimera segmenti 5. convergentia. Telsum multo latius quam longius, medio paulum coarctato basi supra valde tumido. Subunicolor, griseus. Long. 5 mm. Lat. 2,5 mm.

Patria: The collection of the expedition contains one specimen taken in the Acacia-forest at Ngare na nyuki, *Meru,* in January 1906.

Bethalus.

Bethalus emarginatus n. sp.

Tab. II, Fig. 16—20.

Breviter ovalis, ob epimera valida dilatatus, medio corpore fortiter echinatus: caput echinis c. 9 in transversum subseriatim positis; trunci segmentum 1. echinis c. 18, subseriatim positis, eodem modo segmentum 2. echinis c. 12, segmenta 3.—6. echinis denis, segmentum 7. echinis octo; omnes echini in posteriore excelsiore parte segmenti positi; plerique majores, compressi, acuti; nonnulli minores, conoidales; caudæ segmenta 3. 4. echinis ternis, segmentum 5. echino unico, telsum duobus basalibus ornata. Cetera super-

ficies minute squamata. Oculi majores, semiglobosi; ocelli viginti vel plures, majores. Antennae graciles, dimidium corpus longitudine superantes; scapi articulus 2. longus, gracilis, quam articulus 4. vix brevior, quam articulus 3. longior, articulus 5. articulis 3. et 4. unitis longitudine aequalis. Flagellum gracillimum, quam brevior 1. triplo vel plus articulus articulus 2. Epistoma ante subplanum, verticale, marginem frontis lamina transversa supra valde superans. Clypeus utrinque in lobos triangulos, acutos productus. Linea verticalis, marginalis capitis utrinque ante oculos producta, cum lamina epistomatis conjuncta. Trunci segmentum 1. epimeris validis, revolutis, post subtruncatis, angulo exteriore paulum extroverso; epimera segmentorum 2. 7. magna, oblique tetragona, post sensim obliquiora; segmenta 1. 2. 3. subtus ad basin epimeri dente minuto, articulationis causa instructa. Caudae segmenta 3. 4. 5. epimeris longis, triangulis, apicibus acutioribus, segmenti 5. valde divergentibus. Telsum nonnihil longius quam latius; basis brevis, medium contractum, apex tetragonus, longus, post profunde emarginatus. Uropodum scapus plus duplo longior quam latior, ad apicem angustatus, triangulus, apice acuto; exopoditum lateri interiori scapi procul ab apice insertum, elongatum, gracile, apicem scapi non attingens; endopoditum breve, telso multo brevius. Unicolor, albide-flavus. Long. 8—9 mm. Lat. 4,5—5 mm.

Patria: Several specimens of this species were foune in the caves at Mkulumusi pr. Tanga, in the month of June 1906. Also the expedition of Mr. Allfard found specimens of this species in the same locality, Nov. 1903.

A series of Terrestrial Isopods has in the course of time been collected from Central-Africa, that in consequence of their exterior habitus, especially on account of their ability of conglobation, have a great similarity to the species of the genus *Armadillo*. They are easely separated, however, by the form of the telsum which varies to a great extent from the straight sided triangular form to an elongate acuminate triangulate or rightangular prolongation, but are never constricted in the middle in the form of an hour-glass as in the case with *Armadillo*.

Gerstecker founded the genus *Periscyphis* upon one of these central african species, and a second species was taken by Dollfús as type for the genus *Synarmadillo*. In the course of time when I received new species I referred them either to one or the other of these genera, and to which I have added below a third genus *Microcercus*.

It has often been very difficult for me to find the correct position for new species, but have upon my more recent researches been able to make more difinite divisions, and similarly as in the genus *Periscyphis* I give below a complete description to the two other genera.

Periscyphis.

B. L. 4 p. 10.

I know altogether 14 species which I refer to this genus, which are found distributed over the hole N. E. Africa, from Egypt to Abessinia, Djibouti, Somali, British- and German-East-Afrika. Eight species are described: *P. trivialis* Gerst., *P. convexus* B.-L.,

P. albescens B.-L., *P. nigromaculatus* WEDENISSOW, *P. quadrimaculatus* B.-L., *P. ruficauda* B.-L., *P. civilis* B.-L. Six species are at present in my unpublished manuscript.

Only two of the species named below occur in the District here treated.

Periscyphis trivialis.

Periscyphis trivialis GETST. Gliederth. Fauna Sansibar, p. 526. — B.-L. 1 p. 293. — Patria: In the Museum at Berlin are specimens of this species preserved found during the expedition of v. d. DECKEN at the lake Jipe and also from Mt. Karamo at the river Pangani.

Periscyphis pulcher.

Periscyphis pulcher B.-L. Landisp. in Deutsch Ost-Afrika. IV. p. 7 Tab. f. 12. — Patria: I only know one specimen of this species, which was taken at Tanga and is in the posession of the Museum at Hamburg.

Microcercus nov. gen.

Antennarum flagellum articulo priore altero breviore. Oculi majores; ocelli numerosi, viginti vel plures. Mandibularum lamina interior penicillis duobus in mandibula dextra, penicillis tribus in mandibula sinistra. Seta inferior radice longo, solido, supra ramis crinitis numerosis instructo. Maxillae prioris paris lamina exterior dentibus 10 (4—6; subintegris, nonnullis saepe in apice leviter fissis); lamina interior post spina apicali nulla, penicillis ambobus longis, superiore paulo breviore. Maxillipedum articulus labialis latior, mala brevior, spina mediocri et aculeis 2 posterioribus manifestis; palpus latior, articulo tertio vix duplo breviore quam latiore, apice crinitus. Epistoma linea superiore saepe integra saepe deleta. Foramina antennarum minora, tubercula antennaria deleta. Clypeus in lateribus lobatus; lobi plerumque ad medium producti, ut crista in medio abbreviata fingatur. Pleurae capitis concretae; linea marginalis verticalis utrinque ad frontis marginem producta. Trunci segmentum 1. epimero crasso, altecincto, supra sulco profundo suturali a medio segmenti discreto, post fisso, rarissime integro. Segmentum 2. epimero plerumque fisso, pronoto magno. Margo posterior segmentorum priorum subrectus, angulis posticis rotundatis. Marsupium nullum? Caudae segmenta 3. 4. 5. epimeris tetragonis; epimera segmenti 5. valde convergentia. Pleopodes omnium parium tracheis muniti. Telsum medio latiore, subtetragono producto, apice rotundato. Uropodum scapus oblonge subrectangulus. Exopoditum parvum vel minimum, apicale vel superius. Endopoditum mediocre telso vix brevius.

Of the species belonging to this genus I know thirteen, of which six are undescribed. Of the seven described species I have previously referred six of them to the genus *Periscyphis: P. anomalus* GERST., *P. leucocephalus* B.-L., *P. otiosus* B.-L., *P. obtusicauda* B.-L., *P. armadilloides* B.-L., *P. nanus* B.-L. — The seventh species belonging to the genus is *Mesarmadillo senegalensis* DOLLF.

From the district of *Kilimandjaro* the two species mentioned below are known.

Microcercus anomalus.

Tab. 1, Fig. 34—39.

Cubaris anomala GERST. Gliederth. Fauna d. Sansibar. p. 526. — *Periscyphis anomalus* B.-L., Landisp. Deutsch Ost-Afrika, IV, p. 5 Tb. f. 3—4. Patria: This species

seems to be common and widely distributed over the greater portion of East-Africa, the expedition of Prof. SJÖSTEDT has collected it in very large numbers from several localities, for example "the Acaciaforests at the river Ngare na nyuki, *Meru* lowland in November 1905 and January 1906, similarly at Mombo in *Usambara* in numbers in June 1906".

Microcercus armadilloides.

Periscyphis armadilloides B.-L., Landisp. Deutsch Ost-Afrika, IV, p. 5 Tb. f. 5. — Patria: I have only seen one specimen of this species taken by Mr. KRETSCHMER at Kilimandjaro. The specimen marked "Dschala See, Steppe, c. 800 m., 4 Sept. 1894" is in the possession of the Museum at Berlin and is dried and fixed on a pin.

Synarmadillo.

Antennarum flagellum articulo priore altero multo breviore. Oculi minores vel parvi; ocelli numero minore. Mandibularum lamina interior penicillis duobus in mandibula dextra, penicillis tribus in mandibula sinistra. Seta inferior radice longo, solido, supra densius crinito. Maxillæ prioris paris lamina exterior dentibus 9 (4+5: dens 1. 2. 3. 5. in apice levissime fissus); lamina interior post spina mediocri vel majore, penicillis ambobus longis, gracilibus, subæqualibus vel superiore paulo breviore. Maxillipedum articulus labialis latior; mala brevior, spina mediocri et aculeis 2 aut 3 posterioribus manifestis; palpus minus angustus, articulus 3. nonnihil longior quam latior, apice crinibus et setis pluribus instructo. Epistoma linea superiore integra a fronte discretum. Foramina antennaria minora aut mediocria; tuberculæ antennaria subdeleta. Clypeus fornicatus, in lateribus lobatus; lobi oblique ad medium in cristam, in medio abbreviatam, transversam sæpe elongati. Pleuræ capitis concretæ, linea marginalis verticalis utrinque marginem superiorem epistomatis attingens. Trunci segmentum 1. epimero crasso, altecincto, reflexo, a medio segmento sulco raro discreto; margo lateralis per longitudinem sulcatus, post fissus. Segmentum 2. epimeris fissis, pronoto maximo. Margo posterior segmentorum priorum subtransversus. Marsupium nullum? Caudæ segmenta 3. 4. 5. epimeris magnis, rectangulis; epimera segmenti 5. valde convergentia, telsum sæpe superantia. Pleopodes omnium parium tracheis muniti. Telsum plerumque late triangulum. Uropodum scapus magnus, oblique tetragonus. Exopoditum minutum vel minutissimum, punctiforme, aut supra in scapo procul a margine postico aut in latere posteriore vel in medio vel in angulo interno positum. Endopoditum mediocre, telsum plerumque nonnihil superans.

I have referred eight species to the genus *Synarmadillo*, a table for their determination is found in B.-L. 5 p. 276. — Two new species have been collected by the expedition of Prof. SJÖSTEDT, which I describe below.

Synarmadillo marmoratus n. sp.

Tab. II, Fig. 24—31.

Oblonge ovalis, sublævis, minutissime punctatus. Oculi magni, marginem lateralem capitis utrinque occupantes; ocelli numero c. 23. Antennæ dimidio corpore nonnihil breviores, hirsutæ; flagellum paululo brevius quam articulus 5. scapi, articulo priore fere triplo breviore quam articulo altero. Caput breve, latum; epistoma margine superiore in medio subdelefo, utrinque ante oculos manifestiore. Clypeus fornicatus, lobis lateralibus parvis, rotundatis. Linea marginalis verticalis utrinque ad oculos producta.

Trunci segmentum 1. epimero sulco profundiore a medio segmento discreto; ipse margo crassus, maxime ante, per longitudinem leviter sulcatus, sulco ante latiore post angustiore, et post leviter fissus: lacinia exterior multo longior quam interior. Margo posterior utrinque leviter incurvus, angulis externis late rotundatis. Segmentum 2. pronoto magno, fere tertiam partem dorsi occupante, bene discreto nisi in lateribus, epimero ante paululo crassiore, non fisso. Caudæ epimera segmenti 3. magna, oblique rectangula; epimera segmenti 5. paulum convergentia, paulo breviora quam telsum. Telsum lateribus incurvis, medio latiore subtriangulo producto, apice rotundate obtuso. Uropodes oblonge rectanguli, superantes telsum vix, post extus rotundati, intus in dentem producti; exopoditum parvum, duplo fere longius quam latius, fossæ lateris postici scapi insertum; endopoditum longius angustum, telso non brevius. Color e griseo plumbeus maculis crebris albidis, interdum pulchre rufescentibus, conspersis. Long. 9—12 mm. Lat. 4—5 mm.

Patria: The expedition has collected many specimens both in the rain-forest at Kibonoto, *Kilimandjaro*, 11. Decembre 1905 & 5. January 1906, and at *Meru* in the highest parts of the rain-forest, c. 3500 m., 21—24 December 1905 & January 1906.

Synarmadillo simplex n. sp.

Tab. II, Fig. 32—33.

Oblonge ovalis, sublævis, opacus, minutissime squamate punctatus. Oculi magni, marginem lateralem capitis utrinque occupantes; ocelli numerosi, c. 25. Antennæ dimidio corpore nonnihil breviores; scapi articulus 2. multo longior quam articulus 4., articulus 4. nonnihil brevior quam articulus 5; flagellum paulo brevius quam articulus 5. scapi, articulo priore triplo vel quadruplo quidem breviore quam altero articulo. Epistoma convexum maxime supra in medio productum, media frons cum epistomate concreta, in lateribus prominentiis discreta. Clypeus fornicatus, lobis lateralibus parvis, porrectis, rotundatis. Trunci segmentum 1. epimero sulco minus profundo a medio segmento discreto; ipse margo crassus, maxime ante, per longitudinem vix sulcatus, post integer; epimerum subtus dente vel plica posteriore minutissima. Margo posterior segmentorum 1. 2. 3. utrinque fortiter, præsertim segmenti 1. profunde incurvus. Segmentum 2. pronoto mediocri, vix quarta parte dorsi longiore; epimeris integris. Caudæ segmenta epimeris subtriangulis, acutis; epimera segmenti 5. valde convergentia, telso paulo breviora. Telsum lateribus fortiter incurvis, medio anguste triangule producto, apice subacuto. Color griseus maculis fuscis conspersis, aut fuscus maculis griseo-albidis conspersis; caput caudaque obscuriora. Long. 5 mm. Lat. 2 mm.

Patria: Few specimens, 5—6, were taken in leaf-mould in the month of November 1905, at Kibonoto, *Kilimandjaro*, 1300—1800 m.

Aphiloscia.

B.-L. 5 p. 291.

Aphiloscia maculicornis.

Philoscia maculicornis B.-L., Deutsch Ost-Afrika, IV, p. 9. — *Aphiloscia maculicornis* B.-L. 5 p. 292. Tb. 16, Fig. 32—34. — ? *Anchiphiloscia Cunningtoni* Stebb.

Proc. Zool. Soc. Lond. 1908, p. 557. — Patria: Several specimens were taken during the expedition at Mombo in *Usambara*, June 1906, and two specimens were taken at *Kilimandjaro* the 28 Aug. 1905 in the nest of a Termite, which Prof. SJÖSTEDT has determined as *Eutermes segelli* SJÖST. — I think, however, that their being found with Termites is only accidental. This species were known before from East-Africa.

Setaphora.

B.-L. 5 p. 290.

Setaphora Suarezi.

Philoscia Suarezi DOLLF., Mém. soc. zool. Fr. VIII, p. 185. — *Setaphora Suarezi* B.-L. **5** p. 291. Tb. 16, Fig. 6—14. — ? *Anchiphiloscia Karonga* STEBB. Proc. zool. Soc. Lond. 1908, p. 556. — Patria: This species known from several localities in Nord-Madagascar, from the island Réunion, the Comoren islands and the island Fundu near Pemba in British-East-Africa were collected during the expedition of Prof. SJÖSTEDT in great abundance in the district of *Kilimandjaro;* thus at Kibonoto, 1300—1800 m., under leaf-mould in the cultivate zone, July—December 1905; in the rain-forest at *Mera*, 3000—4000 m., 21—24 December 1905; at Kiboscho, from the highest border of the rainforest, 2950 m., in February 1906.

The two species of *Philoscia* Mr. STEBBING has described, both taken during the expedition to Tanganyika by Dr. CUNNINGTON, seem to me to be very different, and I have referred each to two different genera, which they seem to me to suit, but I am not sure of the determination.

Metoponorthus.

Metoponorthus pruinosus.

Porcellio pruinosus BRANDT, Consp. p. 19. — *Metoponorthus pruinosus* B.-L. **1** p. 169. — Patria: *Kilimandjaro,* at Kibonoto, Nov. 1905, one specimen. This species is cosmopolite, it is following man in all the countries of the world-wide.

Uramba.

B.-L. 5 p. 183.

From the district around *Kilimandjaro* Prof. SJÖSTEDT has brought home three species of this genus, which I have separated from the genuine Porcelliones. Of these three species I know two of them before, the third species is new. I give below the description of all three species.

Uramba mus.

Lyprobius mus B.-L., Deutsch-Ost-Afrika IV, p. 8. — *Uramba mus* B.-L. **5** p. 283. Tb. 14, Fig. 15—26.

Caput et trunci segmenta 4 priora in transversum minute, in medio segmentorum fortius, granulata; cetera superficies minutissime squamata. — Oculi majores, semiglobosi, ocelli numero c. 20. Antennarum flagellum articulo priore paulo breviore quam articulo altero. Frons ante crista marginali triangula, in medio abrupta, in epistoma paulum

producta; lobi frontales laterales mediocres, oblique rotundati; epistoma convexum, superiore parte leviter carinata. Trunci segmenta tria priora margine posteriore utrinque incurvo, angulis posticis rotundatis, non retroductis. Caudæ segmenta 3. 4. 5. epimeris mediocribus, triangulis, acutis. Telsum late triangulum, lateribus leviter incurvis, epimera segmenti præanalis paululum superans, supra leviter excavatum, apice acuto. Unicolor, grisea. Long. 6 mm. Lat. 2,5 mm.

Patria: *Kilimandjaro*, at Kibonoto one specimen together with the following two species. Kibonoto, 22 March 1906, in the runs of *Termes bellicosus*, one specimen.

It is with some doubt I refer the two specimens to this species; I think the occurance with the Termes being accidental. Few specimens of this species were before taken on the island Sansibar by Prof. VOELTZKOW.

Uramba trianguliferа n. sp.
Tab. I, Fig. 40—43.

Lyprobius cristatus B.-L. Deutsch Ost-Afrika, IV, p. 8.

Caput et medium corpus, maxime ante, dense et scabre granulata, cetera superficies squamis minutissimis albidis obtecta. Oculi magni, subglobosi, ocelli majores, numero c. 20. Antennarum flagellum articulis subæque longis, articulo priore sæpe nonnihil longiore quam articulo altero. Frons ante marginata; margo in medio in lobum triangulum, productus; lobi frontales laterales magni, rotundate tetragoni. Trunci segmenta 1. 2. margine postico valde curvato; segmenta 3. 4. margine postico subrecto, interdum utrinque levissime incurvo, segmenta 5. 6. 7. margine postico in medio leviter incurvo. Anguli postici segmentorum 4 priorum late rotundati, anguli postici segmentorum 3 posteriorum subrecti. Caudæ segmenta 3. 4. 5. epimeris majoribus, triangulis, acutis. Telsum triangulum, lateribus profunde incurvis, apice acuto, supra leviter excavatum. Unicolor, griseus, in segmentis 2.—7. sæpe macula perlucente flavida post in epimeris ornatus. Long. 10—11 mm. Lat. 4,5 mm.

Patria: *Kilimandjaro* at Kibonoto, 17 July 1905, in rotten wood ("murken stam") half a score specimens; under leaf-mould in the culture zone, 1300—1800 m., Nov. 1905, also half a score specimens.

This species is found in many localities in East-Africa. The specimen I have seen in the Museum at Berlin, taken by Mr. STUHLMANN on the island Kome at the Southend of the lake Victoria Nyanza, and which I have determined as Lyprobius cristatus is belonging to this species. I have also seen one specimen from Udjigi by lake Tanganyika (16 Decbr. 1896, Mr. HÖSEMANN in Museum Berlin), and several specimens from different localities in British East-Africa (Nairobi, two specimens, Aug. 1903; Kijabé, one specimen, 28 Aug. 1903; Pori, two specimens, March 1904; Samburou, one specimen, March 1904; Landiani, 2500 m., two specimens; Nairobi, one specimen, Nov. 1904; Voi, one specimen, Sept. 1908, all collected by Mr. ALLUAUD and preserved in the Museum at Paris).

Uramba marginalis n. sp.
Tab. I, Fig. 14.

Caput et medium corpus leviter granulatum, cetera superficies minute et dense squamata. Oculi magni, subglobosi, ocelli majores, numero c. 20. Antennae dimidium corpus longitudine vix superantes; flagellum articulo priore multo, fere duplo, breviore quam articulo altero. Frons ante leviter marginata, linea marginalis in medio leviter angulate producta; lobi frontales laterales mediocres vel minores, oblique rotundati. Trunci segmenta 1. 2. margine postico valde curvato; segmentum 3. margine postico recto vel leviter curvato; margo posticus segmenti 4. 5. 6. leviter, segmenti 7. fortiter in medio incurvus. Anguli postici segmenti 1. 2. 3. late rotundati, segmenti 4. 5. 6. 7. rotundati subrecti. Caudae segmenta 3. 4. 5. epimeris mediocribus, triangulis, acutis. Telsum latum, brevius, lateribus leviter incurvis, apice minus acuto, supra levissime excavatum. Color obscure griseus; omnes margines segmentorum saepe anguste perlucente albidi. Antennae griseae, scapi articulus 6 apice albido. Long. 6 mm. Lat. 2,7 mm.

Patria: *Kilimandjaro* at Kibonoto, a few specimens together with the proceeding species. In Acaciaforest, Ngare na nyuki, *Meru*, Jan. 1906, one specimen. I have also seen specimens of this species taken in different localities in East-Africa: Madschame at Kilimandjaro (Mr. PAESLER in Mus. Berlin), Naivasha in British East-Africa, Dec. 1904 (Mr. CH. ALLUAUD in Mus. Paris), Kibwesi at lake Tanganyika, 28 Dec. 1905 (Mr. G. SCHEFFLER in Mus. Berlin).

Phalaba nov. gen.

Antennarum flagellum 3-articulatum. Mandibularum lamina interior penicillis duobus in mandibula dextra, penicillis tribus in mandibula sinistra. Seta inferior radice longiore, graciliore, ramis paucis superioribus instructa. Maxillae prioris paris lamina exterior dentibus 10 (4 + 6, dens 1. et 4. in apice fissus, dens 5. minimus); lamina interior post spina breviore sed crassiore, penicillis ambobus longioribus, crassioribus, subaequalibus. Maxillipedum mala longior et angustior, spina mediocri et aculeis tribus, duobus posterioribus minoribus, anteriore majore et latiore; palpi articulus tertius duplo longior quam latior, apice crinito et spina longiore instructo. Frons in lateribus lobata; linea marginalis verticalis utrinque ad lobos laterales producta et cum his conjuncta; itaque pleurae capitis concretae. Trunci segmentum 1. epimero tenui post integro; segmentum 2. epimero integro, pronoto mediocri. Caudae segmenta epimeris distantibus. Pleopodes omnium parium tracheis muniti. Telsum triangulum. Uropodum scapus tetragonus latere exteriore integro, carinato; exopoditum mediocre, elongatum, apicale; endopoditum longum, gracile.

Phalaba brevis n. sp.
Tab. II, Fig. 34—45.

Breviter ovalis, subdeplanata; superficies capite et medio trunco granulis et tuberculis deletioribus aspera; epimera granulis minutis obtecta. Oculi majores; ocelli magni, pauci, numero c. 12, inter se distantes. Antennae longiores; scapi articulus 5. multo,

fere duplo, longior quam flagellum; flagelli articulus 1. paulo brevior quam articulus 2., articulus 2. multo brevior quam articulus 3., articulus 3. apice seta longiore. Frons lobis lateralibus mediocribus, extroversis, oblique rotundatis. Linea frontalis marginalis in medio leviter procurva et sæpissime lissa. Epistoma fere planum. Trunci segmentum 1. magnum, angulis anticis rotundatis, margine posteriore utrinque levissime incurvo; segmenta 2. et 3. margine posteriore utrinque leviter incurvo; segmenta 4. et 5. et 6. et 7. margine posteriore in medio post sensim magis incurvo; anguli postici segmentorum 1. et 2. rotundate subrecti, segmentorum 3.—7. post sensim acutiores. Caudæ segmenta 3. et 4. et 5. epimeris majoribus, distantibus; epimera segmenti 5. subparallela, telsum longitudine æquantia. Telsum triangulum, lateribus leviter incurvis, apice obtusiore. Uropodum scapus brevior quam telsum. Exopoditum? Endopoditum longum, gracile, setis duabus apicalibus telsum superans. Subunicolor, grisea, macula oblonga albida, sæpe obsoletiore, utrinque ad latera segmentorum trunci. Long. 5,5—7 mm. Lat. 3,5—4,5 mm.

Patria: Several specimens were taken at Kibonoto, *Kilimandjaro*, at an altitude of 2000—3000 m., 11 Dec. 1905, and later, 5 Jan. 1906, at an altitude of 2000—2500 m. in the rainforest.

Besides the species here described I also know two other new species from East-Africa. Of one these, *Ph. fusca*, which is very closely related to *Ph. brevis* I have only seen one specimen which was collected at Gadat in South Abessinia in February 1901 by Mr. Neumann and is preserved in the Museum at Berlin. I have figured a uropod of this species in Tab. II Fig. 46 as unfortunately the exopodit was wanting on all the specimens of *Ph. brevis* that were brought back. It appears on the whole that the antennæ and uropods are very fragile and fall off easily with the species of this genus.

Febr. 1910.

Corrigenda.

Page 4, line 2 for "Geman" read "German"
" 5, " 20 for "minutis simereticulate" read "minutissime reticulate"
" 6, " 31 for "segmentum" read "segmentum 1."
" 7, " 1 for "altero quadruplo breviore quam articulo" read "quam articulo altero quadruplo breviore"
" 9, " 3 for "B.-B." read "B.-L."
" ", " 8 for "B.-B." read "B.-L."
" ", " 28 for "B.-B." read "B.-L."
" 10, " 25 for "5" read "5"

Page 13, line 1 for "Flagellum gracillimum, quam brevior 1. triplo vel plus articulus articulus 2." read "Flagellum gracillimum articulus 1. triplo vel plus brevior quam articulus 2."
" ", " 18 for "foune" read "found"
" 16, " 9 for "superantes telsum vix" read "telsum vix superantes"
" 19, " 14 for "articulus 6" read "articulus 5"
" 20, " 19 for "Of one these" read "Of one of these"

PLATE 1.

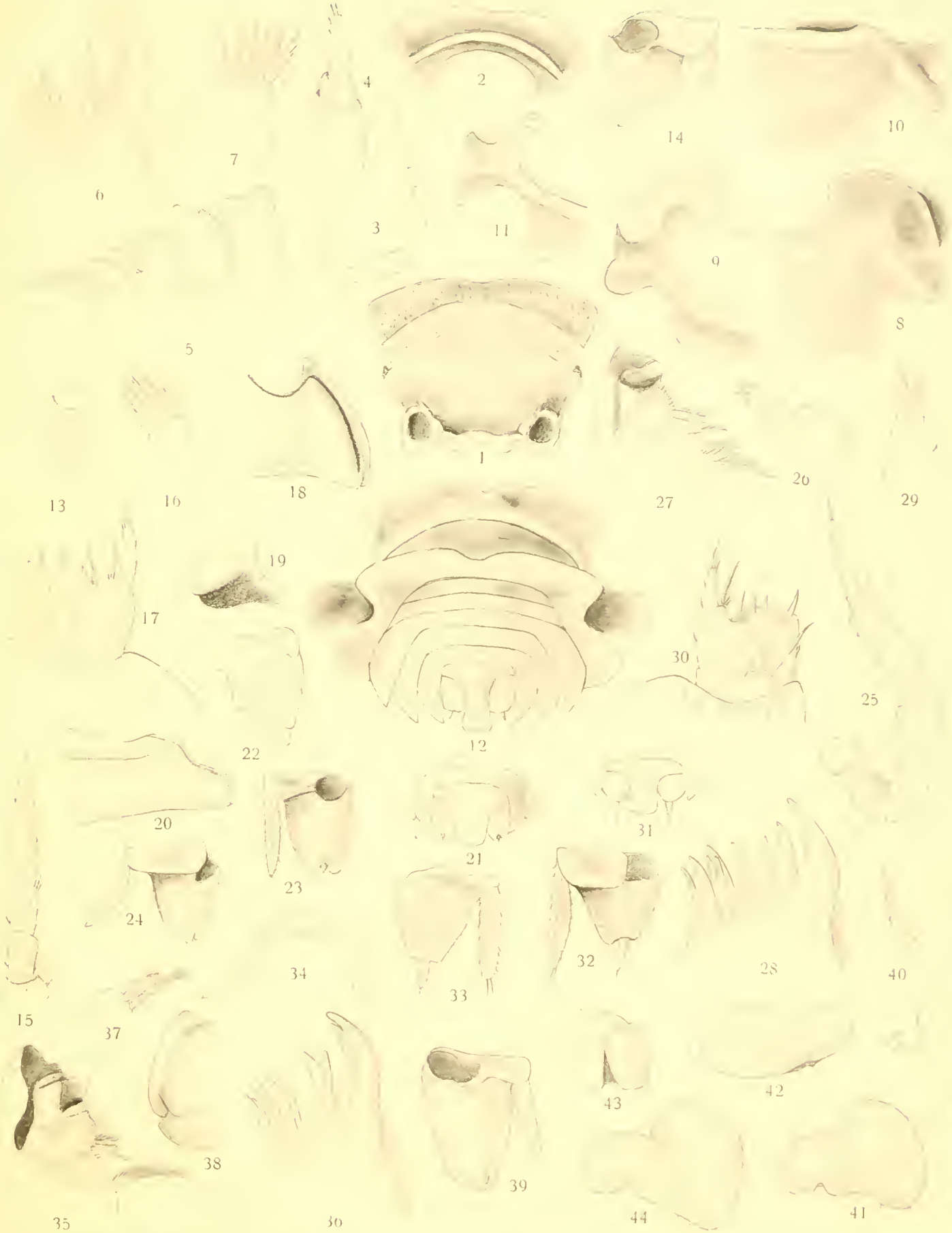
Tabula I.

Fig. 1. *Benechinus armatus* B.-L. Caput, pars anterior. $^{25}/_{1}$.
» 2. » » , e vertice supino visum. $^{25}/_{1}$.
3. » Antenna dextra. $^{25}/_{1}$.
4. » » Antennula dextra. $^{135}/_{1}$.
5. » Mandibula sinistra, supina. $^{135}/_{1}$.
6. » Lacinia exterior maxillæ prioris paris, supina. $^{200}/_{1}$.
7. » » Lacinia interior » » » $^{250}/_{1}$.
8. » Trunci segmentum primum, latus dextrum, pronum. $^{25}/_{1}$.
9. » » » » supinum. $^{25}/_{1}$.
» 10. » » » » secundum, pronum. $^{25}/_{1}$.
11. » » » » » » » supinum. $^{25}/_{1}$.
» 12. » » segmenta sextum et septinum cum cauda, prona. $^{25}/_{1}$.
13. » » Pleopodes lateris dextri, supini, ♂. $^{25}/_{1}$.
» 14. » Uropus sinister, pronus. $^{70}/_{1}$.
15. *Ignamba brevis* B.-L. Antennæ dextræ flagellum. $^{70}/_{1}$.
» 16. » Lacinia interior maxillæ prioris paris, supina. $^{135}/_{1}$.
» 17. » » Maxillipedis sinistri apex, supinus. $^{100}/_{1}$.
» 18. » » Trunci segmentum primum, latus dextrum, pronum. $^{20}/_{1}$.
» 19. » » » » » » supinum. $^{20}/_{1}$.
20. » » » » secundum, » » pronum. $^{20}/_{1}$.
» 21. » Caudæ segmentum quintum cum telso et uropodibus. $^{20}/_{1}$.
22. » Pleopodes lateris dextri, supini, ♀. $^{20}/_{1}$.
23. » » Uropus dexter, pronus. $^{40}/_{1}$.
24. *microps* B.-L. » » $^{40}/_{1}$.
» 25. *Gelsana abnormis* B.-L. Antenna dextra. $^{35}/_{1}$.
» 26. » » Antennula dextra. $^{135}/_{1}$.
» 27. » » Mandibula sinistra, supina. $^{135}/_{1}$.
28. » » Lacinia exterior maxillæ prioris paris, supina. $^{250}/_{1}$.
29. » » Lacinia interior » » $^{250}/_{1}$.
» 30. » Maxillipedis dextri apex, supinus. $^{135}/_{1}$.
» 31. » » Caudæ segmentum quintum cum telso et uropodibus. $^{25}/_{1}$.
» 32. » Uropus dexter, pronus. $^{50}/_{1}$.
33. » » » supinus. $^{50}/_{1}$.
» 34. *Microcercus anomalus* (GERST.). Antenna dextra. $^{10}/_{1}$.
» 35. » » Mandibula sinistra, prona. $^{75}/_{1}$.
» 36. » Lacinia exterior maxillæ prioris paris, supina. $^{75}/_{1}$.
» 37. » Lacinia interior » » » » $^{75}/_{1}$.
» 38. » » Trunci segmenta primum et secundum, latus sinistrum, pronum. $^{8}/_{1}$.
39. » » Uropus sinister, pronus. $^{15}/_{1}$.
40. *Uramba triangulifera* B.-L. Antenna dextra. $^{12}/_{1}$.
41. » » Pleopus dexter primi paris, supinus, ♂. $^{35}/_{1}$.
» 42. » » » pronus, ♀. $^{35}/_{1}$.
43. » » Uropodis sinistri scapus a latere exteriore exhibito. $^{50}/_{1}$.
» 44. » *marginalis* B.-L. Pleopus dexter primi paris, supinus, ♂. $^{35}/_{1}$.

PLATE 2.

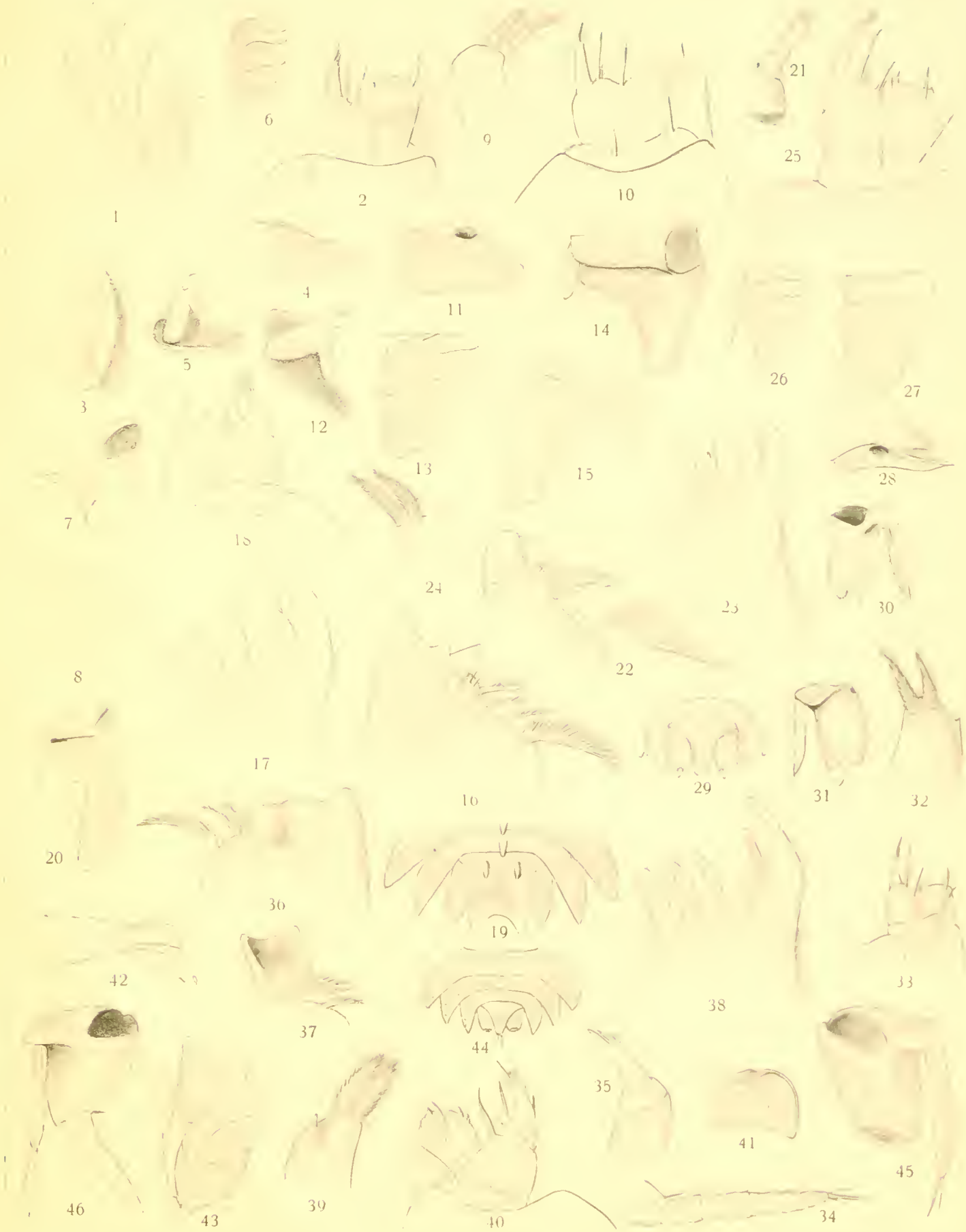
Tabula II.

Fig. 1. *Diploexochus bituberculatus* B.-L. Lacinia exterior maxillæ prioris paris, supina. $^{235}/_{1}$.
» 2. » » Maxillipedis dextri apex, supinus. $^{135}/_{1}$.
» 3. » » Trunci segmentum primum, latus dextrum, pronum. $^{25}/_{1}$.
» 4. » » » » secundum, » » » $^{12}/_{1}$.
» 5. » » » » » » » supinum. $^{20}/_{1}$.
» 6. » » Pleopodes lateris sinistri, supini. $^{15}/_{1}$.
» 7. » » Uropus dexter, pronus. $^{50}/_{1}$.
» 8. » » » » supinus. $^{50}/_{1}$.
» 9. *nanus* B.-L. Lacinia interior maxillæ prioris paris. $^{135}/_{1}$.
» 10. » » Maxillipedis dextri apex, supinus. $^{135}/_{1}$.
» 11. » » Trunci segmentum secundum, latus dextrum, pronum. $^{12}/_{1}$.
» 12. » » » » » supinum. $^{25}/_{1}$.
» 13. » » Pleopodes lateris sinistri, supini, ♀. $^{25}/_{1}$.
» 14. » » Uropus dexter, pronus. $^{50}/_{1}$.
» 15. » » » » supinus. $^{50}/_{1}$.
» 16. *Bethalus emarginatus* B.-L. Mandibula sinistra, prona. $^{100}/_{1}$.
» 17. » » Lacinia exterior maxillæ prioris paris, supina. $^{200}/_{1}$.
» 18. » » Maxillipedis sinistri apex, supinus. $^{100}/_{1}$.
» 19. » » Caudæ segmenta quartum et quintum cum telso et uropodibus. $^{12}/_{1}$.
» 20. » » Uropus dexter, pronus. $^{25}/_{1}$.
» 21. *Synarmadillo marmoratus* B.-B. Antennula dextra. $^{75}/_{1}$.
» 22. » » Lacinia interior mandibulæ dextræ, supina. $^{100}/_{1}$.
» 23. » » Lacinia exterior maxillæ prioris paris, supina. $^{100}/_{1}$.
» 24. » » Lacinia interior » » » » $^{135}/_{1}$.
» 25. » » Maxillipedis dextri apex, supinus. $^{100}/_{1}$.
» 26. » » Pleopodes lateris sinistri, supini, ♂. $^{12}/_{1}$.
» 27. » » » » » » ♀. $^{12}/_{1}$.
» 28. » » Pleopus sinister primi paris, pronus, ♀. $^{25}/_{1}$.
» 29. » » Caudæ segmentum quintum cum telso et uropodibus. $^{10}/_{1}$.
» 30. » » Uropus sinister, pronus. $^{20}/_{1}$.
» 31. » » » supinus. $^{20}/_{1}$.
» 32. *simplex* B.-L. Lacinia interior maxillæ prioris paris. $^{235}/_{1}$.
» 33. » » Maxillipedis dextri apex, supinus. $^{100}/_{1}$.
» 34. *Phalaba brevis* B.-L. Flagellum antennarum. $^{75}/_{1}$.
» 35. » » Antennula sinistra. $^{135}/_{1}$.
» 36. » » Mandibula dextra, prona. $^{135}/_{1}$.
» 37. » » Lacinia interior mandibulæ sinistræ, prona. $^{135}/_{1}$.
» 38. » » Lacinia exterior maxillæ prioris paris, supina. $^{235}/_{1}$.
» 39. » » Lacinia interior » » » » $^{235}/_{1}$.
» 40. » » Maxillipedis sinistri apex, supinus. $^{135}/_{1}$.
» 41. » » Trunci segmentum secundum, latus dextrum, pronum. $^{12}/_{1}$.
» 42. » » Articulus tarsalis pedis septimi paris. $^{235}/_{1}$.
» 43. » » Pleopodes lateris sinistri, supini, ♂. $^{25}/_{1}$.
» 44. » » Caudæ segmenta 3. 4. 5. cum telso et uropodibus (defectis), prona. $^{12}/_{1}$.
» 45. » » Uropus sinister, pronus. $^{50}/_{1}$.
» 46. » *fusca* B.-L. Uropus dexter, pronus. $^{50}/_{1}$.



Auctor delin.

Budde-Lund: Isopoda.



Auctor delin.

Budde-Lund: Isopoda.